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### Guidance uses of expectancy tables in the schools of Alberta

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GUIDANCE USES OF EXPECTANCY TABLES  
IN THE SCHOOLS OF ALBERTA

by

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B. Ed. University of Alberta, 1959

Presented in partial fulfillment of the requirements  
for the degree of

Master of Education

UNIVERSITY OF MONTANA

1966

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## CHAPTER 1

### 1. THE PROBLEM

"Guidance is the keystone of the arch of public education; every effort to improve the guidance services in our schools should be encouraged ..."<sup>1</sup> This comment by Conant is applicable to Canadian schools also.

City schools in Alberta do have guidance counselors, who are specialists in the field, but rural areas do not have these services. Students need help in selecting proper courses or in outlining suitable programs of study for their years in high school. Parents need advice to aid their children in making more suitable choices for future success. "It is the parent's right to have access to any information used by the school in educational planning, and such information interpreted by trained guidance officers will assist the parents in aiming at realistic goals for their children."<sup>2</sup>

In Alberta schools grade nine students write departmental examinations. Their results are divided into three categories. The top ten percent of all grade nine students in the province, writing departmental examinations, receive an H (honors) standing. A P (pass) grading is received by all students ranging in achievement from the tenth to the

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<sup>1</sup>James Bryant Conant, Education and Liberty, Harvard University Press, Cambridge, Massachusetts, 1956. p. 131

<sup>2</sup>James Bryant Conant, Slums and Suburbs, McGraw-Hill Book Company, Inc. New York 1961. P.102

ninetieth percentiles. An F (failure) standing applies to the bottom ten percent.

It is with the large "P" group, which varies so greatly, that some guidance is necessary in the planning of an appropriate high school program. It is to be expected that the lower part of the "P" group will not be able to take a normal academic program and achieve any substantial success. Since test scores are known to have less than perfect reliability it is important that these students be given additional information which will enable them to better evaluate their chances of success.

The Department of Education which provides information for interpretation of the test scores to the student and his parents, has added additional breakdowns of the reports of marks returned to the superintendents and principals. These reports include stanine scores for individual subjects, plus an average stanine score. For further guidance the Department includes a percentile rank result for the Scholastic Ability Test.

It is important then that administrators make use of the material provided by the Department of Education. The present study reports the development of one guidance device, the model of which will be of aid to administrators in Alberta for aiding students in the decision-making process.

Purpose of this study. There are six examinations in Alberta for grade nine students: Reading, Literature, Language, Social Studies, Mathematics and Science. A Scholastic Ability Test is also given.



Too frequently, parents of high school students have been required to help their children decide whether or not to register in academic courses leading to University entrance, without any knowledge of the probabilities of success or failure.

It was the purpose of this study to construct a series of expectancy charts based on past performances using the stanine and percentile scores of students in the County of Mountain View No. 17 and to delineate their uses as guidance tools. The expectancy chart gives realistic information pertaining to the probabilities of passing such a program successfully based on the achievement of others who have scored at similar levels in the past.

While the expectancy charts constructed in the present study would be directly applicable only in the County of Mountain View No. 17, it was intended that the basic design and use of the charts could be replicated in any school district throughout Alberta.

## II. ASSUMPTIONS, DELIMITATIONS, LIMITATIONS, DEFINITIONS

### Assumptions

1. The subjects of this study are representative of the school area concerned.
2. Using as subjects only those students for whom complete data was available will not invalidate the results.
3. The reliability of each test employed in the study is high enough to provide a satisfactory basis upon which to make predictions.
4. It is assumed that the students have the same environment

and have received effective teaching.

5. The model devised as a guidance tool would be applicable to any part of Alberta.

#### Delimitations

1. The study was conducted in the high schools of the County of Mountain View No.17, comprising an area of approximately 900 square miles and including the towns of Didsbury, Olds and Sundre, and the villages of Carstairs and Cremona.

2. The study will be limited to the grade nine examination results in the years 1956, 1957, 1958, 1959, 1960 and 1961.

3. Percentile scores were only available for 1959, 1960 and 1961.

4. A three-year high school program only will be considered.

#### Limitations

Students in the designated high schools who moved into the County from outside the province do not have stanine scores available and were not included in the study.

The reliability of the scoring of the grade nine examinations is partly subjective as some examinations contain essay type questions, but this should not interfere since results of over 15,000 students set the norms.

#### Definitions

For the purpose of this study the following definitions of terms will be used.

Stanine: A term formed by the contraction of "standard nine"; any of the steps in a nine point scale of normalized standard scores having a mean of five and a standard deviation of two with integral values ranging from one to nine.<sup>3</sup>

Stanine score: A normalized score on a nine point one digit scale.<sup>4</sup>

Normal curve: The graphical representation of the theoretical distribution of an infinitely large number of observations of a continuous variable varying purely by chance, resulting in a perfectly smooth, symmetrical, bell-shaped curve, having the mean, median, and mode coinciding, and which is expressed in mathematical terms as a curve whose height taken at any point on the horizontal axis is in inverse proportion to the antilegarithm of half the squared sigma distance of that point from the mean.<sup>5</sup>

County: This term will refer to the County of Mountain View No. 17.

Percentile: A point on a scale of test scores or other measures at which or below which a given percentage of the measures fall, at which or above which the complementary proportion of measures fall; designated by the percentage of cases lying below it.<sup>6</sup>

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<sup>3</sup>Carter E. Good, Dictionary of Education, Second Ed. New York: McGraw-Hill Book Co. Inc. 1959. p.522

<sup>4</sup>Ibid. p.489

<sup>5</sup>Ibid. p.153

<sup>6</sup>Ibid. p.388

S.A.T.: Scholastic Ability Test

Departmental: This term shall mean pertaining to the Department of Education, Alberta.

Matriculation: This term shall refer to a grade twelve program where six or seven courses are taken including Social Studies 30, English 30 and a foreign language. A pass mark of 50% in each course and an average on the six or seven courses of 60%.

Letter Grading: These are scores given by the Department of Education on the reports mailed to grade nine students. "H" is the highest score followed by "A", "B", "C" and "D". "D" is a failing grade; the others all indicate a pass.

Percentage of scores: Using the normal curve the Department of Education assigns letter grades as follows: The top ten percent is H grade, A contains twenty-five percent, B has twenty-five percent, C has thirty percent and D ten percent. These figures apply to each written examination.

Further chapters in this study deal with related literature, particularly to those studies pertaining to prediction, the use of stanines and expectancy tables.

A chapter explaining how data was collected and treated will contain the expectancy charts which deal specifically with the results of all grade twelve students included in the study in the County of Mountain View No.17 for a six year period.

The section dealing with guidance implies how the expectancy tables may be used as a guidance tool. It also contains two specific cases which illustrate this use.

The paper concludes with a summary of the study and some possible outcomes and conclusions.

## CHAPTER 11

### REVIEW OF THE LITERATURE

Many studies have been made which would be classified as falling under the topic of guidance, but this chapter will be confined to a review of only a few which are most closely related to the present study. Studies reviewed here include those dealing with the prediction of high school student success based on tests in Junior High Schools, the use and characteristics of stanines, and the nature and purposes of expectancy tables.

The prediction or selection function of guidance in some form has been present in society as long as has education. Plato was going to have his "Golden Boys", the highly intelligent few, hold all high offices and run the state. This inferred some sort of prediction or selection process. Much later, in the 1920's, with the advent of the intelligence test, homogeneous grouping became fairly common. Thus selection and prediction became a reality. Its efficiency remained questionable, however.

Much research has been done relating to prediction of success in individual subjects, in high school and in college. Hascall did a study involving 800 students on predicting success in High School Foreign Language in White Plains Public Schools, New York. He used many variables as predictors of success but when comparing results, found that teacher's marks in English and certain scores from the Differential Aptitude Tests and the Stanford Achievement Tests as variables were the best predictive

measures. These gave better predictive measures than the Otis Self Administering Test of Mental Ability or scores from the Iowa Foreign Language Aptitude Test.<sup>1</sup>

Jacobs made a study on "Aptitude and Achievement Measures in Predicting High School Academic Success".<sup>2</sup> The study was concerned with predicting success in the Cincinnati Public Schools, and was to evaluate aptitude and achievement tests results as predictors of general academic success, and success in eight high school subject areas.

The grade eight class of 1952-1953 was given the Terman-McNemar Test of Mental Ability and the English Proficiency and Arithmetic Proficiency Tests of Metropolitan Achievement Tests. In the same year the group was also given subtests of the Differential Aptitude Tests.

In 1956-1957, 595 students, 329 girls and 266 boys, from the twelfth grade in three selected schools were chosen as subjects. Data used to form the tables dealt with the results of these students. General academic success was found by averaging teacher grades for different subject areas. Some conclusions of the study were: 1. the arithmetic proficiency test proved to be the best predictor of grade point average. 2. subject areas in which highest prediction occurred were English,

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<sup>1</sup>Edward O. Hascall, "Predicting Success in High School Foreign Language Study", Personnel and Guidance Journal, Vol. XL No. 4, pp. 361-367

<sup>2</sup>James N. Jacobs, "Aptitude and Achievement Measures in Predicting High School Academic Success", The Personnel and Guidance Journal, Vol. XXVII, January 1959 pp. 334-341

Mathematics, Science and Social Studies. Vocational subject areas were not predicted as well. 3, girls were a more predictable group than the boys.

The last of the research studies dealing with prediction in this study is one by Watson<sup>3</sup>, in which he uses certain background variables as predictors such as, family, educational and geographical background of subjects, educational level of father and mother, number of siblings, size of school class, extra-curricular activities, population of town of subject, home setting and religion of the family. The criterion was the subject's grade-point average of the previous summer.

None of the predictors showed a significant relationship to any criterion except the father's educational level and it was statistically related by a .21 correlation. "Despite earlier promising reports suggesting that a number of personal background variables might be useful predictors of academic achievement, the present results cast considerable doubt on the efficacy of all but one to serve that purpose. However, even in this case, a previous negative finding contra indicates the use of this variable as an academic predictor at the present time."<sup>4</sup>

Turning now to the second topic seen as most pertinent to the present study. Stanines are relatively new as a standard score being introduced about World War 11 years. They were not introduced into the educa-

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<sup>3</sup>Charles G. Watson, "Cross-Validation of Certain Background Variables as Predictors of Academic Achievement", The Journal of Educational Research, Vol. LIX No. 4, pp. 145-149

<sup>4</sup>Ibid. p. 147



tional system of Alberta concerning grade nine examinations until 1956. Stanines can be used wherever it is possible to arrange data in a rank order. It is difficult to compare raw scores of different students in various subjects, but if the raw score is converted to a stanine it is then possible to compare the relative standing in various subjects.

When students reach grade nine they are confronted with decisions pertaining to high school such as what courses to take and vocational choices. "The use of stanines provides a simple objective method for making a graphic representation of each student's performance on a wide variety of measures, administered because of their relevance to such decision-making situations. In this way each student may see his strengths and weaknesses and consequently make his decisions in terms of specific data rather than on the basis of purely subjective personal judgments."<sup>5</sup>

Engelhart<sup>6</sup> says that one of the difficulties of using mental age or intelligence quotients is that they are so well known by parents, but not understood, and seem to be so precise in measurement. The stanine is a much coarser measurement and does not lead to as much parental pressure on a child. In using stanines, however, they should only supplement other scores and not replace them.

In concluding this section on stanines the following from Engelhart's paper gives what he considers to be a number of advantages in

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<sup>5</sup> Walter N. Durese, "The Characteristics, Use, and Computations of Stanines", Test Service Notebook, No. 23, p. 3

<sup>6</sup> Max D. Engelhart, "Using Stanines in Interpreting Test Scores", Test Service Notebook, No. 28, pp. 1-5

using stanines. "Stanines offer several advantages over other converted score measurements of ability and achievement: 1. because they are coarser units of measurement, they are less likely to lead to misunderstanding and to ill-considered "ranking" of pupils; 2. because all achievement and ability test raw scores can be converted into stanines, they provide a relatively more satisfactory means of comparing achievements in various subject areas and aptitudes of different kinds; 3. for the same reason, they provide, if appropriate caution is exercised, a quick, relatively sound method of comparing a pupil's achievement with his ability; and 4. they offer a basis for discussing with parents the abilities and achievements of children with less probability of misunderstanding than when IQ's or grade-scores are used."<sup>7</sup>

The last of the areas of related literature to be reviewed in this paper was that of expectancy tables. The first study is one by Rosengarten.<sup>8</sup> He obtained test records for 524 students in Roslyn High School, New York, who had applied for college entrance during the years 1945-1958. Otis Gamma IQ's from grade eleven records and SAT scores from grade twelve records were used. He constructed expectancy tables using this information and from them a counselor could estimate a college-bound student's SAT scores in time to allow for adequate planning for college entrance.

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<sup>7</sup> Ibid. p. 4

<sup>8</sup> William Rosengarten Jr., "Predicting CEEB Scholastic Aptitude Test Scores", Test Service Bulletin, No. 103

Rosengarten says, "Using a prediction chart that yields chances in one hundred that a student will score above a certain maximum or below a certain minimum lessens the obvious risks of a 'best estimate' and still produces predictions that are useful for guidance."<sup>9</sup>

An article of interest to this paper was one written by Wesman.<sup>10</sup> Wesman says that the simple expectancy table is a useful device but that it is only using the predictive value of one predictor at a time. The double expectancy table using two predictors would be highly useful. This type of expectancy table has been found to be useful in industry as well as in education. A large electronic firm administered two tests, Mechanical Comprehension Test and Wesman Personnel Classification Test, to eighty-two computer service representatives. A double expectancy chart was constructed using these two predictors and a score on the table was made the cut-off. The company used the results to keep only the highly successful men.

An important thing to remember about the expectancy tables, whether simple or double, is that the decision is made by the student and not by the table of statistics. The table only makes visible certain expectations which will aid in making decisions. While the major importance of an expectancy table is in making predictions possible it may have another use, particularly the double-expectancy table, and that is to de-

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<sup>9</sup>Ibid. p. 3

<sup>10</sup>Alexander G. Wesman, "Double-Entry Expectancy Tables", Test Service Bulletin, No. 56, May 1966

termine whether a high score in one predictor may offset a low score in another predictor.

The Department of Education has been using stanines to report grade nine examinations results to administrators since 1956 but the use of the stanine in making expectancy tables for use as a guidance tool has not been attempted in the Province of Alberta in the author's knowledge.

The manner in which data was collected and how expectancy tables were constructed will be discussed in the next chapter.

## CHAPTER 111

### COLLECTION AND TREATMENT OF DATA

#### 1. Collection of Data

In Alberta all grade nine students write examinations in June, prepared and distributed by the Department of Education. These examinations are also scored by the Examinations Branch of the Department of Education. Results and norms based on all results of the examinations are returned to each school concerned and to the superintendents of each school system.

The examinations which are given to grade nine students are in Reading, Literature, Language, Social Studies, Mathematics and Science. A stanine score for each student in each subject is included in the results which the principal of the school receives, also a percentile rank for each student on the Scholastic Ability test.

The stanine for each test and percentile rank for each student in the County of Mountain View No. 17 was collected for the years 1956 through and including 1961. This data was obtained from the principals of the five schools concerned in this study, by visitation and also by a form letter. If schools in the County did not have the required information it was then necessary to get the data from the Examinations Branch, Department of Education, in Edmonton, Alberta.

During the period of the study many students entered County schools from outside the County. Data pertaining to these students was

obtained by writing to the principal of the school where the student had written the final grade nine examinations. Few requests were ignored but the information received was not always complete. This accounts for the discrepancies in totals on different tables. The total number of S.A.T. scores available were much smaller but this is due to the fact that the Department of Education only included a percentile rank on the S.A.T. during the last three years of the study.

The grade twelve results of the subjects from June Departmental examinations were obtained from the principals of the high schools within the County. The period was 1959 through and including 1964, which was a period corresponding to the obtained grade nine results.

The County of Mountain View No. 17 is located in the southwestern part of Alberta (see Figure 1). The five towns and villages are not more than thirty-five miles from the central office of the County, which is located in Didsbury.

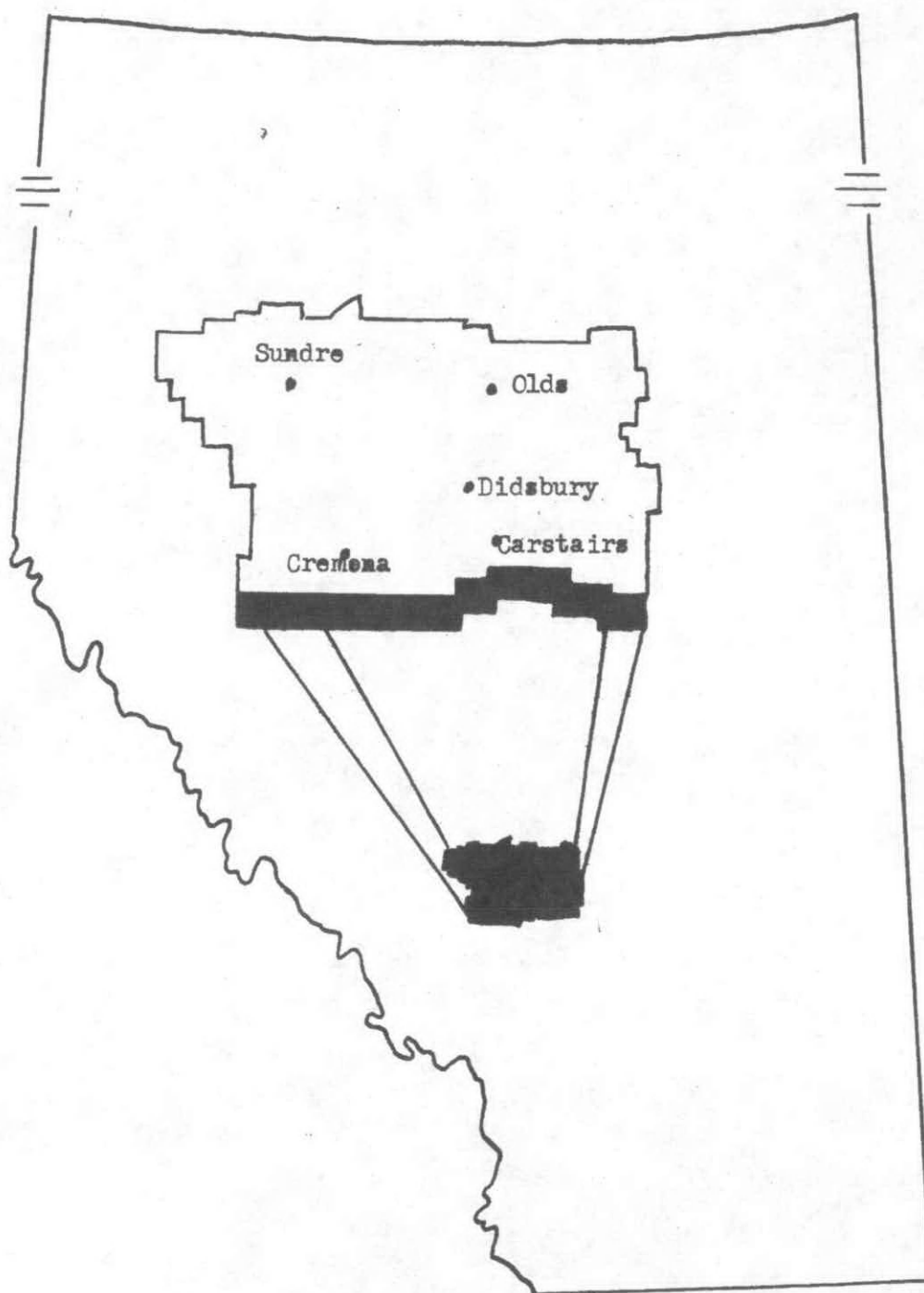


FIGURE 1

COUNTY OF MOUNTAIN VIEW #17  
ALBERTA, CANADA

## 11. Treatment and Reporting of Data

Data from which comparisons among letter gradings, stanines and percentile rank for grade nine students in Alberta for June examinations in 1962 may be made is shown in Figure 2. This diagram is a normal curve distribution of all grade nine students in Alberta for June examinations. Ten percent of the scores will be "D's" which is a failing grade, thirty percent receive "C", twenty-five percent receive "B", twenty-five percent receive "A" and ten percent receive "H" which is an honor grade. The breakdown of these letter grades into stanines is shown also, as is the percentages of students in each percentile rank. This is the information which pertains to each student that the principal receives from the Department of Education. The shaded portion of the graph which shows only the letter grades H, P and F is the result sent to each student.

For the six year period of the study the stanines for each student was added giving a total varying between fifteen and fifty-four. These totals were then divided into eight groups of five and an expectancy work sheet was constructed for tabulating the number of students in each category who had a matriculation pass, diploma pass or had received neither. There is only one pass actually granted by the Department of Education but in this study a matriculation pass indicates that a student in grade twelve has received at least a mark of fifty percent in each examination and an average of at least sixty percent on all six Departmental examinations. The diploma pass means that a student has



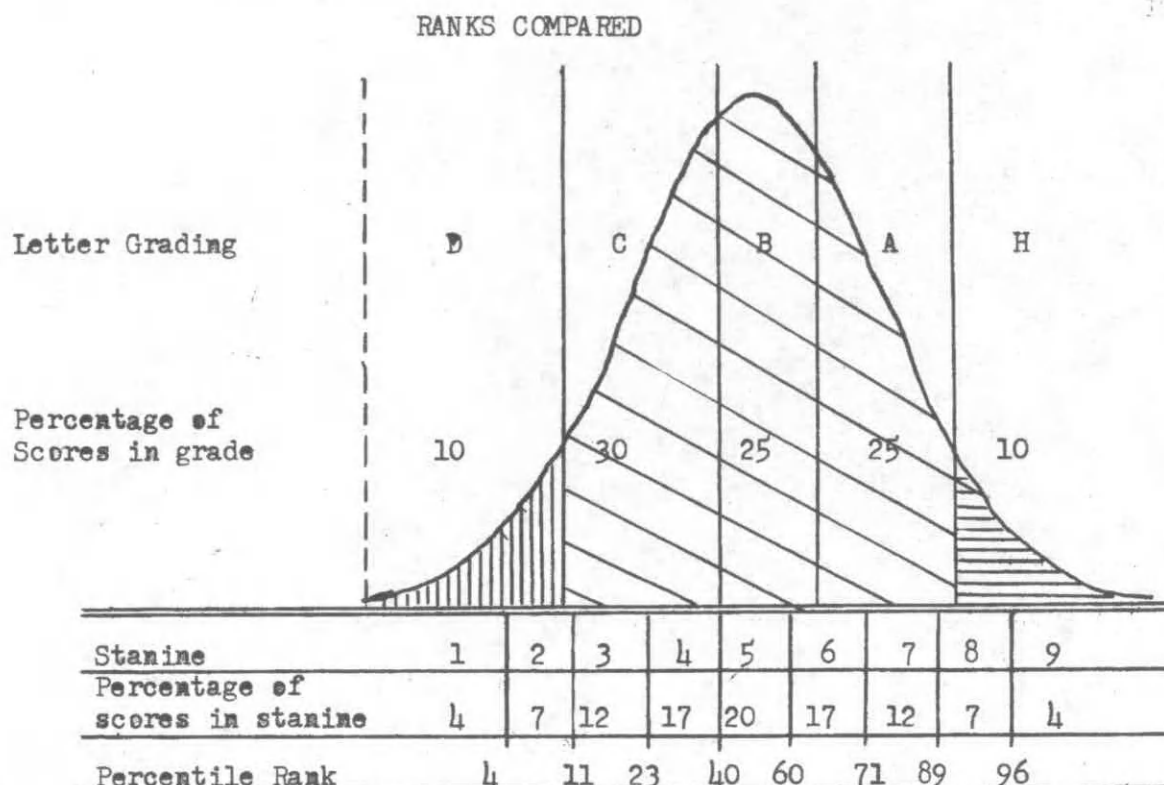


FIGURE 2

<u>Letter Grading</u>	<u>Stanines included in letter grading</u>
H	9, most of 8
A	lower 8, 7, upper 6
B	lower 6, 5
C	4, 3, upper 2
D	most of 2, 1

Letter Gradings

F - Fail  
P - Pass  
H - Honors

Shaded portions Provincial  
basis for grading

received at least forty percent in the examinations and has 100 high school credits. From the work sheet an expectancy table (Table 1) was made. The totals of stanines are the row titles and the columns are first matriculation pass, then diploma pass, neither, and total number of student in that row in the last column. The first three column figures in each cell are in percent so that it is possible to read the number of chances in one hundred of achieving any of the column headings.

In reading this table it may now be shown that for students having a total stanine score between fifty and fifty-four inclusive, that 100 out of 100 in the past have matriculated. A further illustration a student with a total score of stanines between twenty and twenty-four inclusive, could not expect to matriculate but would have four chances in 100 of getting a diploma. The student could also see that in 96 instances out of 100 those who scored in the past as he has, received neither matriculation nor a diploma pass.

Table 2 deals with the stanine for an individual test, Language. The work sheet was constructed as before and an expectancy table derived from it. The row values on this table, however, only read from 1 to 9. Column titles are the same as in Table 1. There were 697 students involved in this table. Some of the incomplete information received contained a Language stanine and so it was used for this table. Reading from Table 2 it may be seen that in row six or stanine six that seventeen percent of students in the past received matriculation while forty-five percent made the diploma pass and thirty-eight percent did not receive either.

Total of Stanines	Chances in 100 of making a Grade 12			
	Matriculation Pass	Diploma Pass	Neither	Total
50 - 54	100			19
45 - 49	77	18	5	57
40 - 44	44	38	18	99
35 - 39	23	47	30	121
30 - 34	8	34	58	178
25 - 29	3	19	78	125
20 - 24		4	96	74
15 - 19			100	14
0 - 14				0 687

TABLE 1

EXPECTANCY CHART USING TOTAL OF STANINES

There were 139 students involved in this row.

Table 3 is using the Mathematic stanine as a predictor, a work sheet was set up and the necessary tabulating done as in the other tables. Row title here is Mathematic Stanine. Column titles are as in the ones already mentioned. The table was then constructed which involved 699 students; this was the largest group in the study. The Mathematic stanine table seems to be more discriminating than the language stanine. There were no passes in stanine row 1, 2, or 3 in the table, but in the Language Stanine Table it can be seen that eleven percent of the students matriculated and that forty-three percent received diplomas. Table 1 actually seems to be more consistent than either Table 2 or Table 3.

Table 4 which is dealing with a lesser number of students and also with ability instead of achievement was set up in the same manner as the other tables. First a work sheet and then the tabulating for the expectancy table. Only 412 students were used because of the fact that statistics were only available for the last three years of the study. An interesting observation in this table is in row nine of the S.A.T. Percentile Rank which shows that only eighty percent of the highest ranking students matriculated.

These tables, then, are the tools to be used in guidance which will be discussed in the next chapter. Two cases illustrating their use will be given.

Language Stanines	Chances in 100 of making a Grade 12			
	Matriculation Pass	Diploma Pass	Neither	Total
9	96		4	30
8	56	31	13	73
7	43	35	22	97
6	17	45	38	139
5	10	28	62	182
4	2	15	83	112
3	5	16	79	44
2	6	6	88	16
1			100	4 697

TABLE 2

## LANGUAGE STANINE EXPECTANCY CHART

Mathematics Stanines	Chances in 100 of making a Grade 12			
	Matriculation Pass	Diploma Pass	Neither	Total
9	90	10		29
8	62	28	10	51
7	40	40	20	115
6	20	42	38	156
5	11	30	59	183
4	4	13	83	108
3			100	46
2			100	11
1				0 699

TABLE 3

EXPECTANCY CHART USING MATHEMATICS STANINES

S.A.T. Percentile Rank	Chances in 100 of making a Grade 12			
	Matriculation Pass	Diploma Pass	Neither	Total
99 - 96	80	4	16	25
95 - 89	57	35	8	37
88 - 77	30	35	35	82
76 - 60	16	36	48	67
59 - 40	5	32	63	90
39 - 23	0	16	84	68
22 - 11	0	7	93	29
10 - 4	0	0	100	12
3 - 1	0	0	100	2 412

TABLE 4

EXPECTANCY CHART USING PERCENTILE RANK

## CHAPTER IV

### GUIDANCE

"Guidance should be viewed as those services which the school renders to a student to help him achieve a life role in harmony with his hopes, aspirations, and abilities."<sup>1</sup> The purpose of this study has been stated as preparing a tool to assist the student in achieving his hopes and aspirations according to his abilities and achievements.

The secondary school of today has a great diversity of courses which meet the needs of the following programs: academic, commercial, vocational and general. Students desire counseling, but not being told what to do, nor do they desire preaching. Patterson<sup>2</sup> says, "Counseling itself, moreover, while available or offered to all, is not imposed, but is provided to those who desire.....Counseling is effective only when it is accepted by the individual client."

Specialized training in guidance is fairly recent, consequently there is a shortage of guidance specialists. The County of Mountain View No. 17 has tried, for the last three years, to engage a guidance specialist but has been unable to do so. Conant has said that a secondary school population of 250-300 should have the services of a spe-

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<sup>1</sup>Jacobson, Paul B., W.C. Reavis and James D. Logsdon, The Effective School Principal, Englewood Cliffs, N. J., Prentice-Hall, Inc., Second Ed. 1963, pp. 225-226

<sup>2</sup>Patterson, C.H., Counseling and Guidance in Schools, Harper and Brothers Publishers, New York 1962, p. 20



cialist.<sup>3</sup> Each school in the County should have one if Conant is correct. The principal of each school must accept the responsibility for guidance of his pupils as long as a shortage of guidance specialists exists. "Thus, from the inception of the school principalship, teachers, and parents have looked to the principal for guidance in solving, not only the problems of management and learning, but also those of formulating effective life plans and aspirations."<sup>4</sup>

Frequently students, due to a lack of self-knowledge and inability to assess chances of future success, drop out of school. They do not realize their potential relative to attainment. Some cases of this type would surely be avoided through effective guidance. It is not always the poor student, or the one lacking intelligence who is a dropout. In a study of dropouts in Ohio schools by French<sup>5</sup> he said, "The greatest loss,...is to the individual who is restricted in development and whose contribution of talent to our way of life is thereby reduced. The restriction of self-realization that accompanies withdrawal from school before a student's capability for entering an appropriately high vocational activity is one of the most devastating aspects of the nation's dropout problems." Self-understanding is not the cure-all for the highly

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<sup>3</sup>Conant, James B., The American High School Today, New York: McGraw-Hill Book Company, 1959, pp. 44-45

<sup>4</sup>Jacobson, op. cit., p. 227

<sup>5</sup>Joseph L. French, "High School Dropouts of High Ability", The Vocational Guidance Quarterly, Vol. XIV No.2 Winter 1965-66, pp 123-127.

complex problem of dropouts but it may be the answer for many students. It is especially important today because society is asking that students be retained in school for longer periods. The Alberta Legislature, 1966, has enacted that the compulsory school attendance age be raised from fifteen to sixteen years. This is going to create many problems for the student who is unable to conceptualize himself and his world realistically.

Grade nine students like to make their own decisions but in many cases do not have the information to do so wisely. A study by Hays and Rothney<sup>6</sup> investigated the educational decision-making of 100 superior grade nine students, fifty boys and fifty girls. The parents of these students were included in the study. The instrument was a questionnaire containing 100 decision-making questions. A conclusion from the study, "It is apparent that ninth grade superior students prefer to make their own decisions on educational matters but it is also clear that parents, particularly fathers, would rather make the choices than leave them to their children or their mates."

A more recent study by Mueller and Rothney referred to in the above study found that guidance conferences were necessary if superior students were to choose wisely when educational decisions must be made. Choices, after all, are made on the basis of the chooser's prediction of outcomes.

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<sup>6</sup>Hays, Donald G. and John W. M. Rothney, "Educational Decision-Making by Superior Secondary School Students and Their Parents," Personnel and Guidance Journal, Vol. XL No. 1 September 1961, pp. 26-30

A predictive study on dropout of freshmen agriculture students at Kansas State University was done by Stone.<sup>7</sup> Using as subjects 161 freshmen who had taken the American College Tests and seventy-two percent of these had high-school ranks in percentile form on file at the University. This was the test group. In september 1962 the number of dropouts was determined. Tables were constructed using the two predictors and criterion. "It appears that use of a few discriminate variables of an intellectual nature permits meaningful predictions regarding whether an entering freshman agricultural student will drop out during or immediately after his freshman year or will enroll for his sophomore year." Stone says that the device is not perfect but it is the basis for further research; in the meantime it was seventy percent accurate and had merit for counseling services.

All of the charts for this study were prepared from achievement of students except Table 4, which deals with ability. One of the assumptions of this paper was that students would receive capable instruction. If instruction is given by capable teachers then achievement should be a reliable predictive device. "The average of previous school marks is usually one of the best indicators of future school performance."<sup>8</sup> In using the tables for a guidance tool one must be objective. "The results

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<sup>7</sup>LeRoy A. Stone, "A Discriminate Analysis and Prediction of Dropouts for Freshman Year With Agricultural Students," The Journal of Educational Research, Vol. LIX No. 1 September 1965, p. 37-38

<sup>8</sup>Cottle, William C. and N. M. Downie, Procedures and Preparations for Counseling, Englewood Cliffs, N. J., Prentice-Hall Inc., 1964 p. 5

of the tests must be allowed to speak for themselves after adequate explanation of the meaning of the scores by the counselor. An illustration of what is meant by objective presentation of the results is the interpretation of a score on a college aptitude test. The statement, 'Three out of four persons with scores like yours do not complete the first year of college', is objective. The statement, 'Your score indicates that the chances are three out of four that you will not complete the first year of college', while apparently objective, is somewhat loaded. But the statement, 'With a score such as yours you should not attempt college', is definitely evaluative and judgmental, and goes beyond the presentation of information to the client."<sup>9</sup> Since the tools provided for in this paper are from achievement tests and ability tests, they should be quite reliable, but the counselor must be objective when using them.

It would appear that gifted under-achievers show up in Table 4, where sixteen percent of the students in the percentiles 96-99 do not receive a diploma. The counselor could check to see what particular problems these students have.

The completed tables may also be used in guidance when dealing with a class or with a group students. A large copy of each table or an overhead projector transparency could be made. A discussion of each table would be given with explanations and results from previous classes. Students would be encouraged to discuss this information. This could stimulate a more concerted effort on the part of the group, but more im-

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<sup>9</sup> Patterson, op. cit., p. 155

portant, it might lead to individual counseling where the student initiates the interview. This is, important in the small secondary school where a guidance counselor is not on staff.

In September 1965, the principal of Didsbury High School used the completed tables in this paper to offer assistance to both parents and students. Two illustrations may help in understanding how the tables were used.

#### CASE 1

A boy entering grade twelve with a total of stanines of twenty-five from grade nine examinations was very frustrated. His achievement from the last year was in the low "C" category. He wished to leave school and take technical training in welding and go farming. The parents wanted the boy to complete grade twelve, go to university and enter the faculty of law.

The mother came to school to talk to the principal. By using the expectancy chart (Table 1), it was possible to show that her son had three chances in 100 of matriculating and being able to enter university, and also that her son had nineteen chances in 100 of receiving a diploma. The principal also explained that the boy's percentile rank of forty-eight meant only thirty-seven chances in 100 of receiving a diploma.

The parent's decision after talking to their son, later, was that he could follow his own plan. The boy decided to stay in school and with the reduced parental pressure he had a much more successful year in school.

## CASE 2

This case involved a boy passing into grade ten in September with a four stanine in mathematics. His percentile rank was sixty-six on the S.A.T. The mother wanted the boy to take the academic mathematics.

Using the expectancy table for mathematics stanines she was shown that her son would have four chances out of 100 of succeeding in it. However, the mother felt that the general mathematics program was an inferior program and that her son had the ability to take the academic mathematics.

The principal accepted the mother's decision but felt that the work would be very difficult for the boy as too much background was missing. The boy failed his mathematics in June.

The paper will be summarized in the next chapter and possible outcomes will be referred to.

## CHAPTER V

### SUMMARY AND OUTCOMES

This study should prove to be one of potentially considerable value in the hands of the principal or guidance counselor. The intention of the study was not to work out a device which would give a rigid rule for laying out a student's program. It was intended that the expectancy tables would give a realistic appraisal of the situation to a student, teacher or parent. The greatest value of the expectancy table then is as a guidance tool.

To retain students in high school, a suitable program must be available for the student in which they can meet with some success. Unrealistic expectations of success can create problems for the student just as underachieving can create trouble for the school. It should be possible to advise the student as to whether he could achieve better success in a three year high school program or in a four year program, an academic, general or business education program.

The tables also indicate that some low achievers in grade nine do meet with success in high school, even matriculating, but the number is relatively few. This is shown particularly well in Table 1, where students had stanine scores as low as three or two and yet had five or six chances in 100 of matriculating.

There was a difference in totals for Tables 1, 2, and 3. This was due to incomplete information sent by principals from schools, in Alberta, outside the County.

A most pertinent outcome of the study would be the guidance tool developed, but also important is the fact that these tables can serve as models for a similar project in any secondary school district in Alberta. The tables constructed proved quite useful as a guidance tool last year in the Didsbury High School.

If in Table 1 the percentage figure in the Neither column is multiplied by the corresponding figure in the Total column and the products are added the total is 348. This means that 50.6 percent of the grade twelve students, in the County of Mountain View No. 17 during the period of the study, did not graduate from high school. Surely this figure can be reduced by proper guidance.

The expectancy tables could be refined so that the predictive value would show success of boys and success of girls separately, the tables could also be double-expectancy tables combining total stanine scores from grade nine final examinations and the S.A.T. percentiles. This would be an interesting project.



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**APPENDIX**

## APPENDIX

Didsbury, Alberta

November 10, 1963.

Dear Mr. Little:

I am working on "A study on the Use of Stanine Ratings for Prediction of Grade XII Results", as a partial requirement for the Master of Education degree from the University of Montana. I believe the results of this study will be useful in guidance of secondary school pupils. The Superintendent of the County of Mountain View No. 17 is cooperating in this study.

I would appreciate your cooperation in giving me the required information concerning a former student who wrote grade nine final examinations in your school.

John Doe	S.A.T.	Math.	Sc.	Lang.	Lit.	Soc. St.	Rdng.	Avge.
	Stanine Ratings							

Your early attention to this matter will be greatly appreciated.

Yours sincerely,